 The quadratic formula

 is slope-intercept form of a linear equation

 is point-slope form of a linear equation

 is standard form of a linear equation, such that A, B & C are integers

 is the slope formula for the slope of a line with ordered pairs  and 

Change the direction of an inequality if you divide/multiply by a negative, for example, 

becomes 

The trinomial  is in standard form,  is in factored form and  is in vertex form

 and 















 or  or  change of base formula













Law of Cosines is used for non-right triangles with SAS and SSS







Law of Sines is used for non-right triangles with SSA and AAS



**Vertical Asymptotes (VA)**

A VA exists for each value of x that makes the denominator 0 but the numerator not zero. For example, the graph of  has a vertical asymptote with equation .

**Holes**

If the numerator and denominator share the same factor with the same power, then the graph has a hole or missing point at the value of x that causes this factor to be zero. For example, the graph of  has a hole at .

**Y-Intercept**

The y-intercept is found by substituting a 0 into all the x variables in the rational expression. For example, the graph of  has a y-intercept of 

**X-Intercepts**

The x-value of an x-intercept exists when the numerator is equal to 0 but the denominator is not 0. For example, the numerator of the rational function  is zero at  but the denominator is not. Therefore, the x-intercept is the point 

**Horizontal Asymptotes (HA)**

**Case 1:** If the numerator has a greater degree than the denominator then the graph does not have a HA. For example, the graph of  does not have a HA.

**Case 2:** If the denominator has a greater degree than the numerator, then the HA is always the x-axis with equation . For example, the graph of  has a HA of 

**Case 3:** If the numerator has the same degree as the denominator, then the HA is found by dividing the coefficient of the greatest powered x in the numerator by the coefficient of the same powered x in the denominator. For example, the graph of  has a HA of .